

Chs 9/1

42 44

What is claimed is:

1. A method for regulating angiogenesis, comprising:
- selecting a patient in need of a change in the rate of angiogenesis at a selected site;
 - determining the change in angiogenesis necessary at said site; and
 - administering to said patient an effective amount of an endothelial progenitor cell or modified version thereof to accomplish the desired result.

2. The method of claim 1, wherein the change in angiogenesis necessary is a reduction of angiogenesis at the selected site and the endothelial progenitor cell is a modified endothelial cell, wherein said cell has been modified to contain a compound that inhibits angiogenesis.

3. The method of claim 1, wherein the change in angiogenesis necessary is an enhancement of angiogenesis at the selected site.

4. The method of claim 3, wherein the endothelial progenitor cell is modified endothelial cell, wherein said cell has been modified to express an endothelial cell mitogen.

2
5. The method of claim 3, further comprising the step of

Chs 9/2

Mr
12/2/98

a

administering to the patient an endothelial cell mitogen or a nucleic acid encoding an endothelial cell mitogen.

6. The method of claim 4, wherein the endothelial mitogen is selected from the group consisting of acidic and basic fibroblast growth factors, vascular endothelial growth factor, epidermal growth factor, transforming growth factor α and β , platelet-derived endothelial growth factor, platelet-derived growth factor, tumor necrosis factor α , hepatocyte growth factor, insulin like growth factor, erythropoietin, colony stimulating factor, macrophage-CSF, granulocyte/macrophage CSF and nitric oxidesynthase.

7. The method of claim 2, wherein the compound is a cytotoxic compound.

8. The method of claim 2, wherein the compound is an angiogenesis inhibitor.

9. The method of claim 5, wherein the endothelial cell mitogen is selected from the group consisting of acidic and basic fibroblast growth factors, vascular endothelial growth factor, epidermal growth factor, transforming growth factor α and β , platelet-derived endothelial growth factor, platelet-derived growth factor, tumor necrosis factor α , hepatocyte growth factor, insulin like growth factor, erythropoietin, colony

Mr
11/1/98

8/16

~~44~~ 46

stimulating factor, macrophage-CSF, granulocyte/macrophage CSF and nitric oxidesynthase.

1
16/7/98

410. The method of claim ³~~9~~, wherein the endothelial cell mitogen is vascular endothelial growth factor.

11. The method of claim ²~~2~~, wherein said patient is in need of treatment for rheumatoid arthritis, psoriasis, ocular neovascularization, diabetic retinopathy, neovascular glaucoma, or an angiogenesis-dependent tumor or tumor metastasis.

5 12. The method of claim ¹~~8~~, wherein said patient is in need of treatment for cerebrovascular ischemia, renal ischemia, pulmonary ischemia, limb ischemia, ischemic cardiomyopathy and myocardial ischemia.

13. A method of enhancing blood vessel formation in a patient in need thereof, comprising:

- a. selecting the patient in need thereof;
 - b. isolating endothelial progenitor cells from the patient;
- and
- c. readministering the endothelial progenitor cells to the patient.

45 47

14. A method for treating an injured blood vessel in a patient in need thereof, comprising:

- a. selecting the patient in need thereof; and
 - b. isolating endothelial progenitor cells from the patient;
- and
- c. readministering the endothelial progenitor cells to the patient.

8

7

15. The method of claim 14, wherein the injury is the result of balloon angioplasty.

9

7

16. The method of claim 14, wherein the injury is the result of deployment of an endovascular stent.

10

7

17. The method of claim 14, further comprising the step of administering to the patient an endothelial cell mitogen or a nucleic acid encoding an endothelial cell mitogen.

11

10

18. The method of claim 17, wherein the endothelial cell mitogen is selected from the group consisting of acidic and basic fibroblast growth factors, vascular endothelial growth factor, epidermal growth factor, transforming growth factor α and β , platelet-derived endothelial growth factor, platelet-derived growth factor, tumor necrosis factor α , hepatocyte growth factor, insulin like growth factor, erythropoietin, colony

1
14/7/98
1

18

stimulating factor, macrophage-CSF, granulocyte/macrophage CSF and nitric oxidesynthase.

19. A method of screening for the presence of ischemic tissue or vascular injury in a patient comprising contacting the patient with a labelled EC progenitor and detecting the labelled cells at the site of the ischemic tissue or vascular injury.

20. A pharmaceutical product comprising a nucleic acid encoding an endothelial cell mitogen and an EC progenitors, in a physiologically acceptable administrable form.

21. A kit for the ^{in vivo} systemic introduction of an EC progenitor and an endothelial cell mitogen or nucleic acid encoding the same into a patient, said kit comprising a carrier solution, nucleic acid or mitogen, and a means for delivery.

22. The kit of claim 21, wherein the means for delivery is a catheter or syringe.